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Charles Leu

7873

25859

7590

04/19/2005

WEI TE CHUNG  
FOXCONN INTERNATIONAL, INC.  
1650 MEMOREX DRIVE  
SANTA CLARA, CA 95050

EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

PAPER NUMBER

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Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/044,268  
Filing Date: January 08, 2002  
Appellant(s): LEU ET AL.

**MAILED**

**APR 19 2005**

**GROUP 2800**

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Wei Te Chung  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed September 13, 2004.

**(1) *Real Party in Interest***

The brief does not contain a statement identifying the Real Party in Interest. Therefore, it is presumed that the party named in the caption of the brief is the Real Party in Interest, i.e., the owner at the time the brief was filed. The Board, however, may exercise its discretion to require an explicit statement as to the Real Party in Interest.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 1-3 and 7-14 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

6,215,592	Pelekhaty	4-2001
4,846,551	Rancourt	7-1989
6,490,381	Adair	12-2002

6,042,752	Mitsui	3-2000
5,914,804	Goosen	6-1999

**(10) *Grounds of Rejection***

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt (US 4,846,551).

Regarding claim 1, Pelekhaty teaches a thin film filter for dense wavelength division multiplexing, the filter comprising a glass substrate (200), a film stack comprising a plurality of cavities (178, 182, 180; Fig. 11) wherein each cavity comprises a first mirror layer (194 for cavity 180) and a second mirror layer (176 for cavity 180) on the glass substrate comprising low refractive index thin films (68) and high refractive index thin films (66), by stating that one film has a high refractive index and the other film has a low refractive index Pelekhaty inherently states that a substantial difference exists between the refractive index of the alternating layers (col. 6 lines 54-55). Pelekhaty lacks reference to the high refractive index thin film comprising indium tin oxide. Pelekhaty teaches instead the use of zirconium oxide (col. 5 line 29).

Rancourt teaches that it is known in the art that indium tin oxide may be substituted for zirconium oxide (col. 4 lines 20-22) as a high refractive index layer. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the indium tin

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oxide film taught by Rancourt in the Pelekhaty invention for the purpose of having a film with low resistance to light transmission and high scratch resistance.

Regarding claim 11, Pelekhaty teaches a thin film filter for dense wavelength division multiplexing, the filter comprising a glass substrate (200), a film stack comprising a plurality of cavities (176, 182, 180; Fig. 11) on the glass substrate comprising low refractive index thin films (68) and high refractive index thin films (66). Pelekhaty further teaches the number of layers in a film stack with five cavities would be about 160. It has been held that it is within the ability of one of ordinary skill in the art to duplicate parts of a structure. The claim limitations relating to the number of cavities (5) and the number of layers (160) are obvious duplication of the known parts of the Pelekhaty reference, and therefore are not patentable over the prior art. Pelekhaty lacks reference to the high refractive index thin film comprising indium tin oxide. Rancourt teaches the use of indium tin oxide instead of zirconium oxide (col. 4 lines 20-22). Indium tin oxide is known to have a refractive index of about 2.1. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the indium tin oxide film taught by Rancourt in the Pelekhaty invention for the purpose of having a film with low resistance to light transmission and high scratch resistance. One would further have been motivated to duplicated the parts of Pelekhaty for the purpose of further eliminating any stray light in the output beam of the filter and thus making the filter transmission more selective.

Claims 2-3, 8-10 and 12-14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt as applied to claims 1 and 11 above, and further in view of Adair.

Regarding claims 2 and 12, Pelekhaty in combination with Rancourt teaches the invention as claimed but lacks reference to a coupling film. Adair teaches the use of a coupling film (718) and the coupling film adjoins an adjacent cavity of the plurality of cavities (Fig. 7A). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include the coupling film of Adair in the Pelekhaty invention for the purpose of coherently coupling light between the successive cavities.

Regarding claims 3 and 13, Pelekhaty in combination with Rancourt teaches the invention as claimed including the use of an alternating refractive index structure (Fig. 11) but lacks reference to the coupling film having a low refractive index. Adair teaches that mirrors are formed of a stack of alternating dielectric films (col. 5 lines 54-55). It is commonly known in the art to have the high refractive index layer of the mirror contacting the cavity (see Pelekhaty Fig. 11 and Goosen Fig. 3). Based on Fig. 7A, the alternating formation of Adair and the commonly known practice of placing the high refractive index layer contacting the cavity Adair shows the coupling layer (718) to be a low refractive index film. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the coupling film be a low refractive index film as taught by Adair for the purpose of limiting the amount of light reflected between the interface of two adjoining cavity structures.

Regarding claims 8 and 14, Pelekhaty in combination with Rancourt teaches the invention as claimed but lacks reference to the low refractive index material being silicon or aluminum oxide. Adair teaches the use of silicon oxide (col. 6 line 46) as the low refractive index material in combination with indium tin oxide (col. 6 lines 20-21) as the high refractive index material. It would have been obvious to a person of ordinary skill in the art at the time the

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invention was made to have the low refractive index layer of Pelekhaty comprise silicon oxide as taught by Adair for the purpose of allowing the filter to be adjustable for use in a wider range of applications.

Regarding claim 9, Pelekhaty teaches the high and low refractive index materials alternating in the film stack (Fig. 11).

Regarding claim 10, Pelekhaty teaches the high and low refractive index thin films have an optical thickness of one-quarter wavelength (col. 6 lines 54-55).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt and Adair as applied to claim 3 above, and further in view of Goossen (US 5,914,804).

Pelekhaty in combination with Mitsui and Adair teaches the invention as claimed but lack reference to the optical thickness of the spacer layer being a multiple of a quarter wavelength. Goossen teaches a spacer layer with an optical thickness of one half wavelength (Fig. 3). One half wavelength is equal to two times a quarter wavelength. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the spacer layer of Pelekhaty have the optical thickness taught by Goossen for the purpose of limiting the size of the film stack and therefore increasing the space efficiency of the optical filter.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Pelekhaty in view of Rancourt as applied to claim 1 above, and further in view of Mitsui.



Pelekhaty in combination with Rancourt teaches the invention as claimed but lacks reference to claimed composition of the indium tin oxide layer. Mitsui teaches the claimed composition (col. 2 lines 38-40). Mitsui teaches the compound having an indium content being between 0.1 and 30 percent and a gallium content of 0.1-30 percent. Therefore the claimed range of 17-20 percent of indium oxide and 83-80 percent of tin oxide is taught by the anticipated by Mitsui. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the composition taught by Mitsui in the Pelekhaty invention for the purpose of having the thin film layer have low resistance to light transmission and a high resistance to scratching.

**(11) *Response to Argument***

On page 5 of Appeal Brief, applicant argues that the Pelekhaty and Rancourt references are not analogous fields and therefore are not properly combined. The applicant argues that the Pelekhaty reference is directed to a Fabry-Perot filter while the Rancourt filter is to improve a cathode ray tube. Applicant argues that the Rancourt filter cannot filter light of a particular wavelength. Both Rancourt and Pelekhaty teach filtering light to obtain a particular wavelength. Both references are directed toward the same field of endeavor and address the same problem, namely reducing a broadband of wavelengths to a narrower band. Figure 8 of Rancourt shows that the reflectance of the filter used in the reference is dependent upon the incident wavelength. Therefore the Rancourt and Pelekhaty references are properly combined.

On page 6 of Appeal Brief, applicant argues that there is no suggestion to combine the teachings of Pelekhaty and Rancourt. The applicant argues that the current application uses indium tin oxide (ITO) to eliminate internal stress and reduce the number of layers in the filter. The motivation to combine the two references arises from the Rancourt reference, which teaches that ITO is an available and known substitute for zirconium oxide (col. 4 lines 16-28), which is used in Pelekhaty. The motivation to combine the two prior art references does not have to be the same as the applicant's reasons, therefore the Rancourt and Pelekhaty references are properly combined.

On pages 6 and 7 of Appeal Brief, applicant argues that the element, 180, of Pelekhaty cannot be both a cavity and a spacer. Applicant argues that Pelekhaty only teaches cavities and lacks a teaching of a spacer while Rancourt teaches neither a spacer nor a cavity. The spacer layers of the current application are elements 23 shown in Figure 2 of the current application. The spacer layers, 23, of Figure 2 from the current application show no difference between the spacer layers and the high refractive index layers, 31. The Pelekhaty reference shows in Figure 10 that a high refractive index layer, 68, is adjacent the cavity, 180, on both sides of the cavity. Therefore, the Pelekhaty reference shows the same type of spacer layers as disclosed in the current application. Furthermore, the Pelekhaty reference teaches that the cavities, 178, 180 and 182, may be either solid or hollow (col. 2 lines 58-59) meaning that the cavities, 178, 180 and 182, may act as either a spacer or a cavity.

On pages 7 and 8 of Appeal Brief, applicant provides similar arguments as presented above in relation to claim 1 for independent claim 11.

On page 8 of Appeal Brief, applicant argues that the examiner improperly uses obvious duplication of parts to reject claim 11. Applicant argues that one must balance the desire for a narrow pass band with low attenuation. Applicant argues that as the number of layers increase, the pass band narrows, but the attenuation increases. On page 8 of Appeal Brief, applicant states, "A person of ordinary skill in the art knows that the number of cavities and layers of an optical filter materially affects the optical performance of the optical filter." And later states, "Thus, the number of layers of the optical filter of the present invention is not a mere duplication of known art, but rather a deliberately calculated result." If one of ordinary skill in the art knows how additional layers affect the performance of the optical filter and the result can be calculated, then the number of layers for a desired pass band and attenuation value is well within the ability of one of ordinary skill in the art to determine.

On page 9 of Appeal Brief, applicant argues that Adair teaches a coupling film for an optical switch now an optical filter and therefore is not analogous art. The Adair reference is a similar field of endeavor as the Pelekhaty reference because both references are directed to filtering light of a desired wavelength. The Adair reference also includes the use of cavities, 706 and 708, in the filtering elements, 702 and 704. The Pelekhaty reference and the Adair reference are directed to solving the same problem in similar fields of endeavor and are therefore properly combined.

On page 10 of Appeal Brief, applicant argues that there is no suggestion in any cited reference that silicon and ITO reduces the internal stress. First, this is not a limitation of any of the current claims. Second, if silicon and ITO layers have reduced internal stress between them, it would be an inherent property of the materials. Further, if the applicant is intending the

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reduced internal stress to be an unexpected result the application must provide evidence. A mere assertion of unexpected results is not sufficient to overcome a rejection.

On page 11 of Appeal Brief, applicant argues that there is no motivation in the Mitsui reference to choose the claimed range of indium oxide. Applicant argues that the Mitsui reference is aimed at electrical properties not optical properties. The Mitsui reference shows in Table 2 that the layers of having the claimed range of indium oxide have a high transmittance. Mitsui also states that layers with the claimed range of indium oxide have a high scratch resistance (col. 3 lines 7-21). Both of these teachings by Mitsui are advantageous and would provide one of ordinary skill in the art motivation to choose the claimed range of indium oxide over another arbitrary value.

On page 12 of Appeal Brief, applicant argues the current application address the problem of eliminate of internal film stress and provides a solution by using a certain number of layers and ITO to form the layers. The prior art of record teaches the claimed materials used to create the current invention and would therefore also reduce internal film stress. No evidence as been provided to support a finding of unexpected results.

On page 12 of Appeal Brief, applicant argues that the examiner is improper in assuming a lack of functional limitations of the decreased internal stress means that the art does not need to teach about internal stress. If a limitation is not present in the claims the examiner would be improper to read such a limitation into the claims absent any means plus function language as stated under 35U.S.C. 112 sixth paragraph. Further, no evidence as been provided that would indicated that the invention claimed in the current application produces results that are not inherent in the materials taught by the prior art of record.

On pages 12 and 13 of Appeal Brief, applicant argues that unexpected results can overcome a prima facie case of obviousness. No evidence has been provided to support such a claim of unexpected results. A mere assertion is not sufficient to overcome a rejection. If the applicant wishes to provide such evidence through a 37 CFR 1.132 affidavit, the evidence would be considered. However, the applicant has failed to file any such evidence.

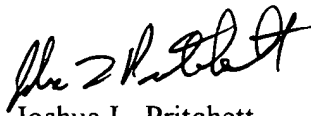
On page 13 of Appeal Brief, applicant argues that the examiner uses impermissible hindsight in constructing the rejection. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

For the above reasons, it is believed that the rejections should be sustained.

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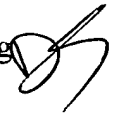
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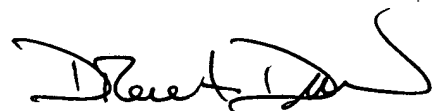
Joshua L. Pritchett  
April 18, 2005

Conferees

Drew Dunn 

Darren Schuberg 

WEI TE CHUNG  
FOXCONN INTERNATIONAL, INC.  
1650 MEMOREX DRIVE  
SANTA CLARA, CA 95050



DREW A. DUNN  
SUPERVISORY PATENT EXAMINER